

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
14 October 2004 (14.10.2004)

PCT

(10) International Publication Number
WO 2004/088573 A1

(51) International Patent Classification⁷: **G06K 9/00**,
G01N 15/14, 21/76

Ltd, The Maynard Centre, Forest Farm Estate, Whitchurch,
Cardiff, South Glamorgan CF14 7YT (GB).

(21) International Application Number:
PCT/GB2003/003876

(74) Agents: **HAMMER, Catriona, MacLeod et al.**;
Amersham plc, Amersham Place, Little Chalfont, Buck-
inghamshire HP7 9NA (GB).

(22) International Filing Date:
8 September 2003 (08.09.2003)

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC,
SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA,
UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0307684.1 2 April 2003 (02.04.2003) GB

(71) Applicant (*for all designated States except US*): **AMER-
SHAM BIOSCIENCES UK LIMITED** [GB/GB]; Amer-
sham Place, Little Chalfont, Buckinghamshire HP7 9NA
(GB).

(84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(72) Inventors; and

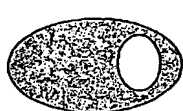
(75) Inventors/Applicants (*for US only*): **ARINI, Nicholas**,
Solvatore [GB/GB]; Amersham Biosciences UK Limited,
The Maynard Centre, Forest Farm Estate, Whitchurch,
Cardiff, South Glamorgan CF14 7YT (GB). **GOODYER,**
Ian, David [GB/GB]; Amersham Biosciences UK Limited,
The Maynard Centre, Forest Farm Estate, Whitchurch,
Cardiff, South Glamorgan CF14 7YT (GB). **ZALTSMAN,**
Alla, Borisovna [GB/GB]; Amersham Biosciences UK

Published:

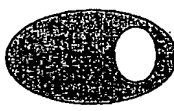
— with international search report

*For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.*

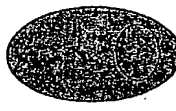
(54) Title: DETERMINING CELL CYCLE PHASE DATA



G0/G1/S



G2



Prophase



Mitosis

(57) Abstract: A method of determining cell cycle phase data for cells comprising at least one luminescent reporter capable of emitting radiation, the at least one luminescent reporter comprising a first luminescent reporter which is capable of being indicative of at least one cell cycle phase, said method comprising: storing classification rules information for classifying individual cells into different cell cycle phases using an automated classification process; receiving image data created by detecting radiation emitted by said at least one luminescent reporter; analyzing said image data to identify object areas in the image data which correspond to individual cells; analyzing said image data, on the basis of said identified object areas, to determine, for a selected cell, one or more measurements including a measurement of a parameter relating to at least a cytoplasmic component of the cell; and applying said classification rules information to said measurements to classify the selected cell into a selected one of a plurality of sub-populations of cells, each sub-population having cells in a different cell cycle phase.